

- tide opposite the target adenosine comprises a ribose with a 2'-OH group, or a deoxyribose with a 2'-H group;
- (c) the AON does not comprise a portion that is capable of forming an intramolecular stem-loop structure capable of binding an ADAR enzyme;
  - (d) the AON does not include a 5'-terminal O6-benzylguanine modification;
  - (e) the AON does not include a 5'-terminal amino modification; and
  - (f) the AON is not covalently linked to a SNAP-tag domain.

**21.** An AON capable of forming a double stranded complex with a target RNA in a cell for the deamination of a target adenosine present in the target RNA by an ADAR enzyme present in the cell, wherein:

- (a) the AON is complementary to a target RNA region comprising the target adenosine, and the AON comprises one or more mismatches, wobbles and/or bulges with the complementary target RNA region;
- (b) the AON comprises one or more nucleotides with one or more sugar modifications, provided that the nucleotide opposite the target adenosine comprises a ribose with a 2'-OH group, or a deoxyribose with a 2'-H group;
- (c) the AON does not comprise a portion that is capable of forming an intramolecular stem-loop structure capable of binding an ADAR enzyme; and
- (d) the AON is not a 17-mer or a 20-mer.

**22.** An AON capable of forming a double stranded complex with a target RNA in a cell for the deamination of a target adenosine present in the target RNA by an ADAR enzyme present in the cell, wherein:

- (a) the AON is complementary to a target RNA region comprising the target adenosine, and the AON comprises one or more mismatches, wobbles and/or bulges with the complementary target RNA region;
- (b) the AON comprises one or more nucleotides with one or more sugar modifications, provided that the nucleotide opposite the target adenosine comprises a ribose with a 2'-OH group, or a deoxyribose with a 2'-H group;
- (c) the AON does not comprise a portion that is capable of forming an intramolecular stem-loop structure capable of binding an ADAR enzyme; and
- (d) the AON is longer than 17 nucleotides, or shorter than 14 nucleotides.

**23.** An AON capable of forming a double stranded complex with a target RNA in a cell for the deamination of a target adenosine present in the target RNA by an ADAR enzyme present in the cell, wherein:

- (a) the AON is complementary to a target RNA region comprising the target adenosine;
- (b) the AON comprises one or more nucleotides with one or more sugar modifications, provided that the nucleotide opposite the target adenosine comprises a ribose with a 2'-OH group, or a deoxyribose with a 2'-H group;
- (c) the AON does not comprise a portion that is capable of forming an intramolecular stem-loop structure that is capable of binding an ADAR enzyme;
- (d) the AON comprises 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10 mismatches, wobbles and/or bulges with the complementary target RNA region.

**24.** The AON of claim **20**, wherein the nucleotide opposite the target adenosine is a cytidine, a deoxycytidine, a uridine, or a deoxyuridine.

**25.** The AON of claim **20**, wherein the nucleotide directly 5' and/or 3' from the nucleotide opposite the target adenosine comprises a ribose with a 2'-OH group, or a deoxyribose with a 2'-H group.

**26.** The AON of claim **25**, wherein all other nucleotides in the AON comprise a 2'-O-alkyl group.

**27.** The AON of claim **20**, comprising at least one phosphorothioate linkage.

**28.** The AON of claim **27**, wherein the 2, 3, 4, 5, or 6 terminal nucleotides of the 5' and 3' terminus of the AON are linked with a phosphorothioate linkage.

**29.** The AON of claim **28**, wherein the 5 terminal nucleotides of the 5' and 3' terminus of the AON are linked with phosphorothioate linkages.

**30.** The AON of claim **20**, wherein the AON is longer than 10, 11, 12, 13, 14, 15, 16 or 17 nucleotides.

**31.** The AON of claim **20**, wherein the AON is shorter than 100 nucleotides.

**32.** The AON of claim **20**, wherein the AON comprises 18 to 70 nucleotides.

**33.** A pharmaceutical composition comprising the AON of claim **20** and a pharmaceutically acceptable carrier.

**34.** A method of treating or preventing a genetic disorder in a subject in need thereof, the method comprising administering the AON of claim **20** to the subject.

**35.** A method of deaminating at least one target adenosine present in a target RNA in a cell, the method comprising:

- (i) contacting a cell with the AON of claim **20** thereby to permit the AON to enter the cell and an ADAR enzyme comprising a natural dsRNA binding domain to deaminate the target adenosine in the target RNA to an inosine; and
- (ii) optionally identifying the presence of the inosine in the targeted RNA.

**36.** The method of claim **35**, wherein step (ii) comprises:

- (a) sequencing the targeted RNA sequence;
- (b) assessing the presence of a functional, elongated, full length and/or wild type protein when the target adenosine is located in a UGA or UAG stop codon, which is edited to a UGG codon through the deamination;
- (c) assessing the presence of a functional, elongated, full length and/or wild type protein when two target adenines are located in a UAA stop codon, which is edited to a UGG codon through the deamination of both target adenines;
- (d) assessing whether splicing of the pre-mRNA was altered by the deamination; or
- (e) using a functional read-out, wherein the target RNA after the deamination encodes a functional, full length, elongated and/or wild type protein.

**37.** The AON of claim **20**, wherein the target RNA sequence encodes CFTR, CEP290, alpha1-antitrypsin (A1AT), LRRK2, BDNF, or wherein the target RNA is encoded by the IDUA gene.

**38.** The AON of claim **26**, wherein all other nucleotides in the AON comprise a 2'-O-methyl group.

**39.** The method of claim **34**, wherein the genetic disorder is selected from the group consisting of: Cystic fibrosis, Hurler Syndrome, alpha-1-antitrypsin (A1AT) deficiency, Parkinson's disease, Alzheimer's disease, albinism, Amyotrophic lateral sclerosis, Asthma,  $\beta$ -thalassemia, Cadasil syndrome, Charcot-Marie-Tooth disease, Chronic Obstructive Pulmonary Disease (COPD), Distal Spinal Muscular Atrophy (DSMA), Duchenne/Becker muscular dystrophy,